

CLAIMS

1. **(Original)** A catalytic system comprising a catalyst comprising nanoporous or mesoporous palladium and an ion-exchange electrolyte.
2. **(Original)** A catalytic system as claimed in claim 1 wherein the catalyst further comprises one or more of platinum, gold, ruthenium, rhodium, osmium, iridium, silver, nickel, copper, cobalt, iron, chromium, lead, vanadium or tungsten.
3. **(Original)** A catalytic system as claimed in any one of claims 1 to 2 wherein the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.
4. **(Amended)** A catalytic system as claimed in any one of claims 1 to 2 wherein the ion-exchange electrolyte is a cation exchange electrolyte.
5. **(Original)** A multi-component catalyst comprising a nanoporous or mesoporous palladium and one or more of platinum, gold, ruthenium, rhodium, osmium, iridium, silver, nickel, copper, cobalt, iron, chromium, lead, vanadium, tungsten, carbon, nitrogen, oxygen, sulphur, selenium, tellurium or phosphorous.
6. **(Original)** A process for the production of a catalyst as claimed in claim 5, said process comprising solidifying one or more metal precursors in the presence of a templating agent and then removing the templating agent.
7. **(Amended)** A process for the oxidation or reduction of inorganic and/or organic molecules comprising contacting said molecules with the catalytic system as claimed in claim 1 or 2, or a multi-component catalyst comprising a nanoporous or mesoporous palladium and one or more of platinum, gold, ruthenium, rhodium, osmium, iridium, silver, nickel, copper, cobalt, iron, chromium, lead, vanadium, tungsten, carbon, nitrogen, oxygen, sulphur, selenium, tellurium or phosphorous.
8. **(Original)** A process as claimed in claim 7 wherein the organic molecule has from one to twelve carbon atoms.
9. **(Amended)** A process as claimed in claim 7 wherein the organic molecule is methanol.

10. **(Cancelled)**

11. **(Amended)** A process for the manufacture of a catalytic system as claimed in claim 1 or 2 comprising contacting the catalyst with the ion-exchange electrolyte.

12. **(Amended)** An electrode comprising a catalytic system as claimed in claim 1 or 2, or a multi-component catalyst comprising a nanoporous or mesoporous palladium and one or more of platinum, gold, ruthenium, rhodium, osmium, iridium, silver, nickel, copper, cobalt, iron, chromium, lead, vanadium, tungsten, carbon, nitrogen, oxygen, sulphur, selenium, tellurium or phosphorous.

13. **(Original)** A fuel cell comprising an electrode as claimed in claim 12.

14. **(Original)** A sensor comprising an electrode as claimed in claim 12.

15. **(Original)** A method for the detection of organic and/or inorganic molecules in a sample comprising contacting said sample with a sensor as claimed in claim 14 and detecting the current due to the oxidation or reduction of the molecules.

Claims 16-21 **(Cancelled)**

22. **(New)** The catalytic system of claim 3 wherein the ion-exchange electrolyte is a cation exchange electrolyte.

23. **(New)** The process of claim 7 wherein, in the catalytic system, the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.

24. **(New)** The process of claim 7 wherein, in the catalytic system, the ion-exchange electrolyte is a cation exchange electrolyte.

25. **(New)** The process of claim 8 wherein the organic molecule is methanol.

26. **(New)** The process of claim 11 wherein, in the catalytic system, the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.

27. (New) The process of claim 11 wherein, in the catalytic system, the ion-exchange electrolyte is a cation exchange electrolyte.
28. (New) The electrode of claim 12 wherein, in the catalytic system, the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.
29. (New) The electrode of claim 12 wherein, in the catalytic system, the ion-exchange electrolyte is a cation exchange electrolyte.
30. (New) The fuel cell of claim 13 wherein, in the electrode comprising the catalytic system, the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.
31. (New) The fuel cell of claim 13 wherein, in the electrode comprising the catalytic system, the ion-exchange electrolyte is a cation exchange electrolyte.
32. (New) The sensor of claim 14 wherein, in the electrode comprising the catalytic system, the catalyst is Pd, PdPt, PdAu, PdPtRu, PdPtIr, PdPtAu, PdPtRuIr, PdPtRuOs or PdPtRuIrOs.
33. (New) The sensor of claim 14 wherein, in the electrode comprising the catalytic system, the ion-exchange electrolyte is a cation exchange electrolyte.